



# **HAP-free, Low VOC Chemical Spot Paint Removers for Army Weapons Systems (SAGE 16-06)**

21 January 2016

**Jack Kelley  
Materials Engineer**

**U.S. Army Research Laboratory  
410.306.0837 / [john.v.kelley8.civ@mail.mil](mailto:john.v.kelley8.civ@mail.mil)**

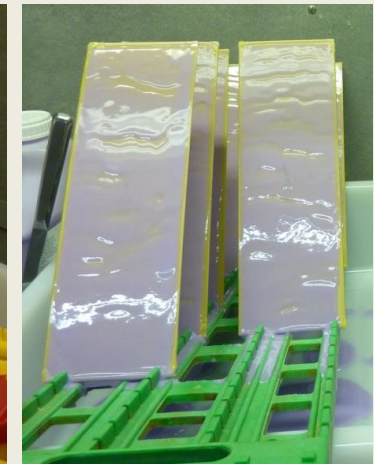


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## HAP-free, Low VOC Chemical Spot Paint Removers for Army Weapons Systems (SAGE 16-06)

### Project Description

- ARL will investigate HAP-free chemical spot strippers to remove Chemical Agent Resistant Coatings (CARC) with comparable performance to methylene chloride/phenol containing products
- Products will be tested and qualified to new AMCOM military specification for removing CARC
- The end product applies to ground vehicles and ground support equipment coated with CARC (MRAP, Stryker, HMMWV, etc.). Compatibility with aviation components will be considered.



### Requirement/Impact

- AERTA PP-13-12-01: Securing the Availability of Green, Enhanced Coatings.
- Complies with projected new NESHAP for Surface Coating of Defense Land Systems and Miscellaneous Equipment
- Eliminate the use of methylene chloride, phenol for spot stripping of CARC by providing qualified options
- Reduced impact on human health and improve working environment

### Progress Report

- Key dates
  - Endorsement signed by:
    - PEO Aviation 1Q FY16
    - CARC Commodity Manager 1Q FY16
    - PEO GCS, PEO CS&CSS, and PEO M&S expected in 2Q FY16
  - TTA signed TBD: 1Q FY17
  - End/transition point: 1Q FY18
- Recent accomplishments/issues
  - Tested performance of some candidate strippers IAW TT-R-2918A
  - Published test report
  - Selected commercial candidates for further testing



# **SAGE-Coat IPR**

## **Chemical Agent Resistant Polysiloxane Coating to Eliminate Isocyanates (SAGE 16-05)**

21 January 2016

**Mr. John A. Escarsega**  
**Lead – Organic Coatings Research Team**  
**ARL, APG MD**  
**410-306-0693/john.a.escarsega.civ@mail.mil**

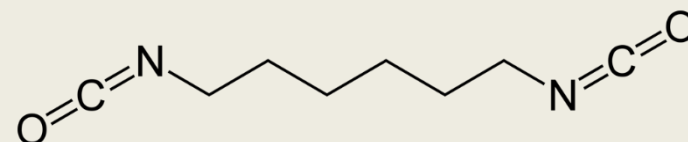


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# Chemical Agent Resistant Polysiloxane Coating to Eliminate Isocyanates (SAGE 16-05)

## Project Description

- ARL will develop and formulate a non-isocyanate chemical agent resistant coating (CARC)
- ARL will test, evaluate and validate the formulation developed to meet MIL-DTL-64159 requirements
- Demonstrations will be conducted for final validation of formulations
- Specifications will be revised to include relevant test methods for application and new type
- Qualified products will be assigned NSNs; MIL-DTL-64159 QPD roster will be populated



1,6 Hexamethylene Diisocyanate

## Requirement/Impact

- AERTA PP-13-12-01: Securing the Availability of Green, Enhanced Coatings
- OSHA National Emphasis Program – Occupational Exposure to Isocyanates: reducing or eliminating the incidence of adverse health effects from exposure to isocyanates
- Aerospace NESHAP and regional air quality programs by reducing the amount of VOCs and HAPs found in topcoats

## Progress Report

- Key dates
  - Endorsement signed by: PEO Aviation and CARC Commodity Manager 1Q FY16
  - Endorsement expected from PEO GCS, PEO CS&CSS and PEO M&S in 2Q FY16
  - Initial formulations and tier one testing: 4Q FY16
  - End/transition point: 4Q FY20
- Recent accomplishments/issues
  - ARL attended and participated in Office of Naval Research (ONR) polysiloxane program
  - Concluded SERDP non-isocyanate R&D program
  - Began literature search on current polysiloxane efforts



# **SAGE-Coat Program IPR HAP-Free, Low VOC Zinc Rich Primers (SAGE-16-03)**

January 21, 2016

**Fred Lafferman  
Research Chemist  
Army Research Laboratory  
(410)-306-1520/Fred.Lafferman.civ@mail.mil**



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## HAP-Free, Low VOC Zinc Rich Primers (SAGE-16-03)

### Project Description

- ARL will reformulate existing zinc rich primers to eliminate hazardous air pollutants
- Reformulate zinc rich primers with VOC content of 2.80 lbs/gal or lower
- Zinc rich primers to be qualified to new metal rich primer specification
- Reformulated zinc rich primers to have minimal impact with depot flow operations



### Requirement/Impact

- AERTA requirement PP-13-12-01
- 48 CFR Part 223, Minimizing the Use of Materials Containing Hexavalent Chromium
- Estimate reduction of 300K pounds per year of Volatile Organic Hazardous Air Pollutants (VOHAP) based upon projected usage of zinc rich primers
- Reduction of economic impacts due to the use of HAP-free solvents

### Progress Report

- Key dates
  - Publication of metal rich specification: 2Q-FY16
  - Letter to vendors on required reformulation: 2Q-FY16
  - Endorsement letter: 2Q-FY16
  - Initiate laboratory testing: 3Q-FY16
- Recent accomplishments/issues
  - Request to vendors for present solvent package
  - Identified test methods for test screening



# **SAGE-Coat Program IPR Ultra-Low VOC CARC Primers (SAGE 16-04)**

January 21, 2016

**Fred Lafferman  
Research Chemist  
Army Research Laboratory  
(410)-306-1520/Fred.lafferman.civ@mail.mil**



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## Ultra Low VOC CARC Primers (SAGE 16-04)

### Project Description

- ARL will develop and implement ultra-low VOC CARC primers to meet all present and future solvent emission regulations
- Design the coatings for enhanced corrosion and CARC resistance as well as conforming to user requirements.
- Revisions to MIL-DTL-53022 and MIL-DTL-53030 adding new lower VOC types
- Reformulation of existing coatings with new polymer technology



### Requirement/Impact

- AERTA requirement PP-13-12-01
- Ventura County Air Pollution Control District Rule (VCAPCD) Rule 74.18 "Motor Vehicle and Mobile Equipment Coating Operations" and published Code of Maryland Regulations (COMAR) rule; 26.11.19.23, "Control of VOC Emissions from Vehicle Refinishing"
- A reduction of 400-500K lbs per year of non-exempt solvent emissions could be realized from current Army and Marine Corps usage
- Mitigate sustainability risk to weapon system maintenance

### Progress Report

- Key dates
  - Endorsement letter: 1Q-FY16 PEO Aviation and CARC Commodity Manager
  - Survey paint industry and raw material manufactures: 2Q-FY16
  - Characterize performance and application criteria for specification revisions: 3Q-FY16
  - Initiate laboratory testing of submitted samples: 4Q-FY16
- Recent accomplishments/issues
  - Informed vendors of new requirements and cancellation plans of Types II and III of MIL-DTL-53022



# **SAGE-Coat Program IPR**

## **Qualification of HAP-Free Solvent Blend for Hand-Wipe Cleaning (SAGE-16-01)**

January 21, 2016

**Fred Lafferman**  
**Research Chemist**  
**Army Research Laboratory**  
**(410) 306-1520/Fred.Lafferman.civ@mail.mil**



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## Qualification of HAP-Free Solvent Blend for Hand-Wipe Cleaning (SAGE-16-01)

### Project Description

- ARL will test and qualify HAP-Free and low VOC hand wipe cleaners for military tactical equipment
- Relevant test methods identified for assets and type of application
- Testing will be conducted for qualification to military specifications MIL-PRF-32405 and MIL-PRF-32359
- NSN's assigned for qualified products



### Requirement/Impact

- AERTA requirement PP-13-12-01, PP-4-02-04
- National Emission Standards for Hazardous Air Pollutants (NESHAP) for Aerospace Manufacturing and Rework
- Mitigate sustainability risk to weapon system maintenance

### Progress Report

- Key dates
  - Endorsement letter: 1Q-FY16 PEO Aviation, 2Q-FY16 for endorsement from PEO GCS, PEO CS&CSS, PEO M&S for the SAGE-Coat project as a whole
  - Determine relevant test methods: 3Q-FY16
  - Contact previous stakeholders: 3Q-FY16
  - Review previous chemical cleaners and test results: 4Q-FY16
- Recent accomplishments/issues
  - Conference call with AMCOM G-4 to review previous work, test results and issues

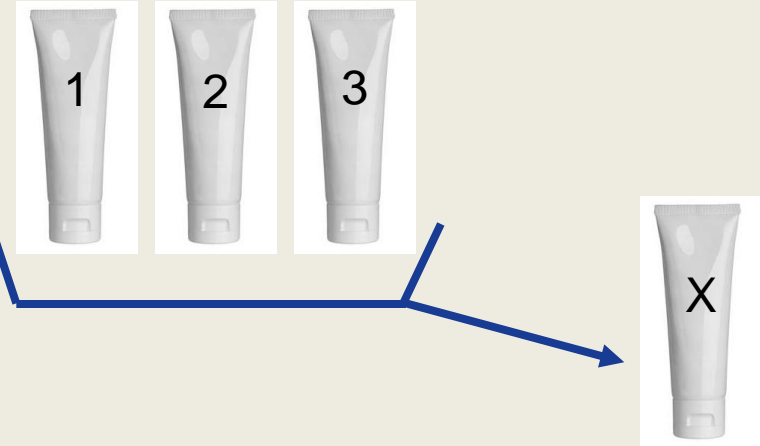


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## Evaluation and Consolidation of Sustainable Alternative Sealants and Adhesives (SAGE 16-02)

### Project Description

- ARL will work with AMCOM and TARDEC to identify five high priority adhesive/sealant products for replacement based upon end-user priorities
- AMCOM/TARDEC will revise DMWRs and TMs to reflect updated/new specifications, ARL will generate NSNs with sustainable qualified adhesives
- ARL will experimentally validate replacements with AMCOM/TARDEC performing dem/val
- ARL will share specification, QPL updates with Army maintenance facilities through shared online user access



- Reduce overlapping hazardous adhesive/sealant NSN's with compatible non-hazardous replacements

### Requirements/Impact

- AERTA PP-13-12-01
- Defense Federal Acquisition Regulation Supplement (DFARS): Prohibition (223.7302), Minimizing the Use of Hexavalent Chromium
- OSHA Regulation 1910.1026: Occupational Exposures to chromium (VI)
- REACH – commercial driver for non-DoD market dominated adhesives and sealants industry
- Local and state regulations on VOC emissions

### Progress Report

- Key dates
  - Endorsement signed: 1Q-FY16 PEO Aviation
  - Endorsement signed: expected 2Q-FY16 PEO GCS, PEO CS&CSS and PEO M&S
- Recent accomplishments/issues
  - TARDEC has initial adhesive user data
  - AMCOM has initial adhesive user data
  - ARL coordinating with NASA for common user data format and web-based access platform
  - Briefed SAGE to DASA Collins (Army ESOH)